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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,510	07/24/2006	Hans Sigrist	62130-0036	7938
61263	7590	11/25/2009	EXAMINER	
PROSKAUER ROSE LLP			CHRISS, JENNIFER A	
One International Place			ART UNIT	
Boston, MA 02110			PAPER NUMBER	
			1794	
			MAIL DATE	
			DELIVERY MODE	
			11/25/2009	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/569,510

Applicant(s)

SIGRIST ET AL.

Examiner

JENNIFER A. CHRISS

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 2, 4 - 5, 14 - 21, 25, 32 - 34, 37, 53 and 59 - 61 is/are pending in the application.
- 4a) Of the above claim(s) 1, 2, 4, 5, 14-21, 25 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33 - 34, 37, 53 and 59 - 61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The Applicant's Amendments and Accompanying Remarks, filed July 6, 2009, have been entered and have been carefully considered. Claims 33, 34, 37, 53 and 61 are amended, claims 1, 2, 4, 5, 14-21, 25, and 32 are withdrawn, claims 3, 6-13, 22-24, 26-31, 35-36, 38-52 and 54-58 are canceled and claims 1 – 5, 14 – 21, 25, 32 – 34, 37, 53 and 59 – 61 are pending. In view of Applicant's amendment to claim 37 and 61, the Examiner withdraws the 35 USC 112, 2nd paragraph rejection as detailed in the previous Office Action. In view of Applicant's amendments to claim 33 requiring that the yarn or textile product is covalently attached via a carbene-generating linker molecule, the Examiner withdraws the 35 USC 102 rejection as detailed in paragraph 6 of the previous Office Action. The invention as currently claimed is not found to be patentable for reasons herein below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 33 – 34, 37, 53 and 59 – 61 are rejected under 35 U.S.C. 102(b) as being anticipated by the article entitled *Surface Bioengineering for Microanalytics and Biomaterials* by H. Gao et al.

The article discusses a technology using a photolinker polymer called OPTODEX which leads to the generation of highly reactive intermediates (carbenes) which form covalent bonds with biomolecules on any type of material (Section entitled "A Novel Technology"). The immobilized biomolecules can include enzymes, antigens, etc. (Section entitled "Applications"). The article specifically indicates that OPTODEX treated textiles have been made (Section entitled "Applications"). It should be noted that the term textile is synonymous with the term fabric as claimed. Additionally, the textile would comprise materials either natural or synthetic in origin as those are the one two types of materials.

Claim Rejections - 35 USC § 103

5. Claims 33 – 34, 37, 53 and 59 – 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helmus et al. (WO 01/54745 A2) in view of the paper entitled *Surface immobilization of biomolecules by light* by Sigrist et al.

Helmus et al. is directed to bioactive coatings for use with heart valves which prevent tissue overgrowth (Title).

Helmus et al. teach that the valve has a sewing ring, housing component and valve components located within the housing component, where any one or all of the components can be made from a polymeric material or a textile made from polymeric

materials (page 5, lines 5 – 25). Helmus et al. teach that the valve components can be made from a polyester textile or in the form of a weft or warp knit with or without a velour or woven with or without a velour (page 6, lines 1 - 15). Helmus et al. additionally note that the fabric can be made manufactured from a polymeric yarn comprising a polyester wrapped with polypropylene and also discusses the use of nylon (page 6, lines 1 - 30). Helmus et al. teach that the bioactive component such as anti-inflammatories, growth factors, etc. (page 6, lines 30 – 35 and page 7, lines 1 – 16) can be attached using covalent bonds (page 8, lines 20 – 25). Helmus et al. specifically indicate that the bioactive component can be attached to the sewing ring, housing component or combinations of the two (page 8, lines 20 - 23). Helmus et al. discusses several non-limiting examples of covalent attachment methods (pages 8 – 15). Helmus et al. note that the bioactive component can be bound by means of a cleavable linker (page 15, lines 25 - 35).

Helmus et al. fail to teach that the yarn or textile product is covalently attached via a carbene-generating linker molecule.

The paper entitled *Surface immobilization of biomolecules by light* by Sigrist et al. discusses attaching biomolecules which perform special biological functions on material surfaces via light-controlled reactions have unique advantages (Abstract). The preferred photoreagents for immobilization on material surfaces include arylazides and trifluoromethylaryldiazirines which when activated with light undergo distinct chemical processes that finally lead to the formation of covalent bonds between the photogenerated intermediates and target biomolecules on material surfaces (page

2340, Section 2). The paper note that highly reactive carbenes are formed on photoactivation of trifluoromethyl-aryldiazirines (page 2340, Section 2.1). As shown in Table 1 on page 2342, various biomolecules have successfully been attached to polymeric materials using arylazides and arylidiazirines as photoreagents. The paper concludes that using light for covalent biomolecule immobilization is highly compatible with the biomolecules and allows selection of the time of initiation and extent of biomolecule binding enabling multiple functionalization of surfaces (page 2345, Section 5). The paper also notes that it is expected that experimentally facile light-dependent immobilization procedures will facilitate screening of factors that control cell attachment and differentiation (page 2346, Section 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to arylazides and trifluoromethylaryldiazirines as linker molecules which generate highly reactive carbenes to attach biomolecules as suggested by the article to the polymeric woven, knit and yarn structures of Helmus et al. motivated by the desire to create a prosthetic heart valve having an easily tailored bioreactivity allowing the ability to select the time of initiation and extent of biomolecule binding enabling multiple functionalization of surfaces.

Response to Arguments

6. Applicant's arguments with respect to claims 33 – 34, 37, 53 and 59 - 61 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **JENNIFER A. CHRISS** whose telephone number is (571)272-7783. The examiner can normally be reached on **Monday - Friday, 8:30 a.m. - 6 p.m., first Friday off**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Larry Tarazano** can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A Chriss/
Primary Examiner, Art Unit 1794

/J. A. C./
Primary Examiner, Art Unit 1794